

# China Carbon Neutrality Tracker Newsletter



The bimonthly *China Carbon Neutrality Tracker (CCNT)* newsletter monitors critical climate initiatives led by China's government, businesses, and other organizations as the nation progresses toward its dual-carbon goals.

**TOP NEWS:** Highlights of climate progress across China

GEC Market

Transport and Energy Integration

Carbon Market

Green and Digital Transition

Ozone-Depleting Substances Control

Low-Carbon Development of Coal Power

**IN FOCUS:** From hot prospects to cold facts — unpacking China's heat pump development

**SUBNATIONAL UPDATES:** Subnational and city-level official statistics, policies, and actions related to dual-carbon goals

Subnational Methane Emission Reduction

Carbon Peaking

Clean Industry

Green Development of Manufacturing Industry

## Top News

### *Decoding Policy – Expert Views on New Policies*

China is clarifying green power consumption responsibility for key energy-consuming entities and sectors, as it steps up efforts to enhance the efficiency and activity of the Green Electricity Certificate (GEC) Market for Renewable Energy.

The [\*Guidelines for Promoting the High-Quality Development of the Energy Green Certificate Market for Renewable Energy\*](#), launched by the National Development and Reform Commission (NDRC) and other departments, outline the following objectives:

#### **By 2027**

- The GEC trading system will be substantially improved, with a dual mechanism combining mandatory and voluntary green power consumption refined.
- Systems for green power consumption **accounting, certification, and labeling** will be established.

#### **By 2030**

- The institutional framework of the GEC market will be strengthened, and the demand for voluntary green power consumption across society will increase significantly. The GEC market will operate in an efficient and orderly manner.

Additionally, the proportion of green power consumption for **iron & steel, non-ferrous metals, building materials, petrochemicals, chemical industries, and data centers**, as well as other energy-intensive entities and sectors, will be increased. **Newly built data centers** in national hub nodes must further increase their green power consumption ratio beyond the **baseline requirement of 80%**.

Recently, RE100, a global coalition promoting renewable energy use, has announced its [\*full endorsement of China's Green Electricity Certificates \(GECs\)\*](#)—signaling growing international recognition of GECs' credibility and influence. According to Pan Huimin, Deputy Director of the Department of New Energy and Renewable Energy Sources of the National Energy Administration, this marks a major milestone in the ongoing development of China's Green Certificate system. The *Guidelines* released in March have been key to revitalizing the system—restoring market momentum, boosting demand, and reversing the decline in certificate prices.

[Yi Yuechun](#), General Manager of China Renewable Energy Engineering Institute, pointed out that while mandatory consumption policies like the Renewable Portfolio Standard have imposed certain constraints, the responsibilities to consume green power remain vague for key industries. Voluntary consumption, meanwhile, is primarily driven by multinational and export-oriented companies seeking to meet supply chain requirements and fulfill social responsibility commitments. To address this, the policy calls for clearer mandatory consumption requirements for GECs, stronger voluntary consumption mechanism, and better alignment between the two markets and related systems to fully unlock demand for GECs.

[Zheng Ying](#), distinguished researcher at the Tian Gong Think Tank of Research Institute for Environmental Innovation (Suzhou) Tsinghua, noted that the *Guidelines* outline mandatory Green Certificate consumption rules, targeting two key groups: energy-intensive industries and data centers. Traditional industries such as steel, non-ferrous metals, building materials, petrochemicals, and chemicals are central to energy-saving and emission reduction. Meanwhile, data centers are seeing a surge in green electricity demand. Leveraging the Green Certificate consumption potential in these industries can expand its impact across the broader economy.

## China drives the integration of its transportation and energy sectors to boost green development and the new power system.

China's Ministry of Transport, alongside nine other government bodies, has issued new policy guidelines aimed at accelerating this integration. The [Guiding Opinions on Promoting the Integrated Development of Transportation and Energy](#) set a clear roadmap through 2035. **By 2027**, the country aims to establish a coordinated, multi-agency framework for integrated development, with electricity making up 10% of the transportation sector's end-use energy consumption. **At least 5 GW of non-fossil energy capacity** is to be installed along transportation infrastructure corridors, with the local consumption ratio steadily increasing. The rollout of electric and new energy vehicles will continue to gain momentum, and green fuel production for the transport sector is expected to rise significantly.

**By 2035**, electricity will be a dominant power source for the sector, with green energy generated along transport infrastructure primarily consumed on-site. Battery electric vehicles are expected to dominate new vehicle sales, and large-scale deployment of zero-emission heavy trucks will take off. A nationwide supply system for green transport fuels will also be largely in place.

[Zhang Na](#), professor at the School of Economics and Management at Beijing Jiaotong University, noted that the transport sector currently accounts for around 17% of China's total energy consumption—trailing only the industrial and building sectors. Yet electricity makes up less than 5% of energy used in transportation, and green electricity contributes under 2%. With nearly 90% of the sector still reliant on fossil fuels, the path to decarbonization remains steep, underscoring an urgent need to shift toward cleaner alternatives.

Road transport, particularly freight, holds the greatest potential for electrification, with light-duty trucks particularly well-suited for electric power. To support this shift, expanding fast-charging infrastructure is needed along highways to meet demand.

## Steel, cement, and aluminum are officially included in China's Carbon Market.

The Ministry of Ecology and Environment (MEE) issued the [\*Work Plan for Expanding the Coverage of the National Carbon Emissions Trading Market to Include Steel, Cement, and Aluminum Smelting Industries\*](#). The Plan aims to incorporate the steel, cement, and aluminum smelting industries into the national carbon emissions trading market. Specifically, it proposes that 2024 will serve as the first compliance year for these industries, with the initial compliance cycle to be completed by the end of 2025.

Following this expansion, the national carbon emissions trading market is expected to include an **additional 1,500 key emitting entities**, covering **approximately 3 billion tons of CO<sub>2</sub>e** in newly added emissions. The scope of regulated greenhouse gases will also be broadened to include three categories: carbon dioxide (CO<sub>2</sub>), **carbon tetrafluoride (CF<sub>4</sub>)**, and **hexafluoroethane (C<sub>2</sub>F<sub>6</sub>)**.

The *Work Plan* states that "from 2024 to 2026, the emission allowance will roughly remain at break-even points". [Wang Ruoyu](#), an analyst for the Climate Change and Energy Transition Project at Peking University, pointed out that this takes into account the needs of local economic development, controls the additional costs to these industries while maintains their overall competitiveness, and considers the international recognition of China's carbon market.

[Shi Weiwei](#), general manager of Datang Carbon Asset Co., Ltd., clarified that in the medium term, as more industries are integrated and the baseline continuously tightened, the carbon pricing mechanism will be more robust to better reflect emission reduction costs. He also recommended that enterprises in the newly included industries take early actions to track policy and market dynamics and build professional carbon asset management teams to prepare for future trading compliance.

## ***Policy Snapshot – Policy Highlights at a Glance***

### **China releases policies to synergize the green and digital transition for sustainable development.**

The Office of the Central Cyberspace Affairs Commission issued the [\*Key Points for Coordinated Digital and Green Transformation in 2025\*](#). It outlines 22 key initiatives across four areas: promoting green and low-carbon development of the digital industry, accelerating the application of digital technologies to enable green transformation, leveraging green transformation to drive the development of the digital industry, and strengthening overall coordination and implementation.

Previously, two other policies about digitalization led by the Ministry of Industry and Information Technology were issued, highlighting the importance of digitalization to empower industrial green transition.

The [\*Guidelines for the Development of Digital Energy and Carbon Management Centers in Industrial Enterprises and Parks\*](#) are formulated to provide guidance for industrial enterprises and parks in establishing **digital energy and carbon management centers**, promoting the application of digital technologies to **empower green and low-carbon transition**, and enhancing **industrial energy conservation and carbon reduction performance**.

The [\*Implementation Plan for the Digital Transition of the Light Industry\*](#) emphasized accelerating the green transformation. Focusing on the **leather, paper, plastics, batteries, ceramics, daily glass**, and other industries, the *Plan* will promote the application of low-carbon, energy-saving, and environmentally friendly technology and equipment. It also calls for the integration of digital technologies to **strengthen intelligent monitoring and control of energy and water consumption, pollutant and carbon emissions**. Additionally, the plan supports the construction of green factories and green parks.

### **China tightens control on ozone-depleting substances for climate and health protection.**

The MEE, together with four other departments, launched the [\*National Plan for China's Implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer \(2025–2030\)\*](#). The *Plan* aims to protect the ozone layer, address climate change, and safeguard human health.

Except for exempted controlled uses and feedstock uses, the production and use of the following seven categories of already phased-out substances are prohibited—**chlorofluorocarbons (CFCs), halons, carbon tetrachloride (CTC), methyl chloroform, hydrobromofluorocarbons, bromochloromethane, and methyl bromide**. The production and use of **hydrochlorofluorocarbons (HCFCs)** and **hydrofluorocarbons (HFCs)** for controlled uses will be phased down.

Previously, China also announced the [\*Measures for the Administration of the Import and Export of Ozone Depleting Substances\*](#), to strengthen the management of the import and export of ozone-depleting substances in China.

## **China launches new plan to support low-carbon transition in the coal power sector.**

[\*The Implementation Plan for the Next-Generation Coal Power Upgrade Initiative \(2025-2027\)\*](#), published by the NDRC and National Energy Administration, establishes a comprehensive technical indicator system for coal-fired power plants, focusing on four key aspects: **clean and low-carbon development, safety and reliability, efficient regulation, and smart operation**. The *Plan* outlines a next-generation coal power upgrade initiative, setting specific targets for 2027 based on different local conditions to meet the rapid regulation demands and boost low-carbon retrofitting and construction of coal power facilities.



## In Focus: From Hot Prospects to Cold Facts — Unpacking China’s Heat Pump Development

*Heat pumps—electric devices that transfer heat from cooler to warmer areas—play a key role in clean heating and cooling. Increasingly seen as a critical technology for decarbonizing buildings and industry, they anchor China’s latest green tech push. As a major manufacturer and exporter of heat pumps, China recently rolled out a [new action plan](#) to turbocharge the sector. In this edition of CCNT, we spotlight heat pumps, exploring the hurdles to wider deployment in China and what lies ahead for this growing industry.*

### Global Heat Pump Giant Faces Domestic Growing Pains

China is both a major manufacturer and the world’s top exporter of heat pumps. According to the [International Energy Agency \(IEA\)](#), 40% of all heat pumps sold globally in 2023 were made in China. The country exported over 10 GW of heat pump capacity—half the world’s traded volume that year. While global heat pump sales dipped in 2023 amid high interest rates, inflation, and falling natural gas prices, China stood out as the only major market to defy the downturn. Early figures from 2024 suggest this growth momentum is continuing.

However, despite the industrial “heat” surrounding the sector, actual deployment remains in its infancy. An [analysis](#) co-authored by Zhao Hengyi, Secretary-General of the Heat Pump Professional Committee under the China Energy Conservation Association, and Ni Long, professor at Harbin Institute of Technology, noted that the technology has yet to penetrate into its target sectors. In buildings, heat pumps account for **less than 5% of space heating**, and their market share in water heating is still **under one-fifth** that of gas-powered systems. In industry, where nearly half of energy use is lost as waste heat, heat pump deployment is even more limited, making up **less than 1% of total industrial heat use**.

According to [Yang Lingyan](#), researcher at the China Academy of Building Research, a major barrier to wider adoption is cost. Under China’s current energy pricing system, heat pumps often struggle to compete economically. **Initial installation costs** can be steep—for instance, household air-source heat pumps may cost **50% to over 100% more** than conventional air-conditioning units with the same capacity. On top of that, **retrofitting buildings and expanding grid capacity** to accommodate new systems can further raise costs, dampening consumer enthusiasm. In most regions, the operating costs of heat pumps remain higher than traditional heating methods.

**Technical hurdles** persist as well. While China has developed relatively mature technologies for supplying industrial steam below 130°C, it still lacks stable, scalable solutions for higher temperatures. A [research article](#) in *Energy of China* points out that compared to countries like the US, Japan, and those in Europe, China lags in key industrial heat pump metrics such as output, temperature range, and installed capacity. Industrial heat pump use remains concentrated in a few niche sectors—such as food processing, tobacco, pharmaceuticals, and new energy—with relatively few large-scale demonstration projects.

### Policy Push Accelerates Heat Pump Development

In March, the National Development and Reform Commission, together with five other departments, issued the [Action Plan for Promoting High-Quality Development of the Heat Pump](#), setting the goal of significantly strengthening heat pump manufacturing and technology R&D capabilities by 2030. It aims to:

- Improve the energy efficiency of key heat pump products by over 20%.
- Achieve breakthroughs in core technologies such as high-power, high-temperature heat pumps, high-efficiency compressors, and next-generation refrigerants.
- Promote steady growth in both the application area of heat pumps in buildings and the installed capacity of heat pump systems.

The Plan also calls for wider adoption of heat pumps across the construction, industrial, agricultural, and transportation sectors. According to [Yan Jinguang](#), Director of the Evaluation Division at the National Energy Conservation Center, heat pumps offer significant advantages in efficiency and operating costs compared with conventional coal-to-gas or coal-to-electricity retrofits in the agriculture sector. They are also becoming a key technology for agricultural processes such as crop drying. Yan estimates that if heat pumps meet 50% of residential heating and 40% of industrial heating demand **by 2050**, total installed capacity could reach **2 million MW**.

### Next Steps for Heat Pump Development

Looking ahead, several experts see industrial applications as a key growth engine for heat pumps. [Yang Li](#), Deputy Director of the Institute for Global Decarbonization Progress (iGDP), notes that while technologies for low- and medium-temperature heating (below 100°C) are already relatively mature in China, high-temperature heat pump solutions remain in early development. Medium- to high-temperature segment—particularly systems that meet heating demands between 100°C and 200°C—holds strong growth potential. To unlock this market, she calls for **targeted policy interventions**—such as clear penetration targets, dedicated fiscal incentives, and green finance policies—to help drive demand.

[Zhang Dongsheng](#), Secretary-General of the Thermoelectricity Industry Committee under the China Energy Conservation Association, agrees that technological progress alone is not enough. “Now that we’ve made progress in expanding operating temperatures and applicable scenarios, the focus now shifts to real-world application,” he said. “Industrial sectors vary widely in their requirements for heat, pressure, and working environments. **Customization** will be essential to match solutions to specific industrial processes.”



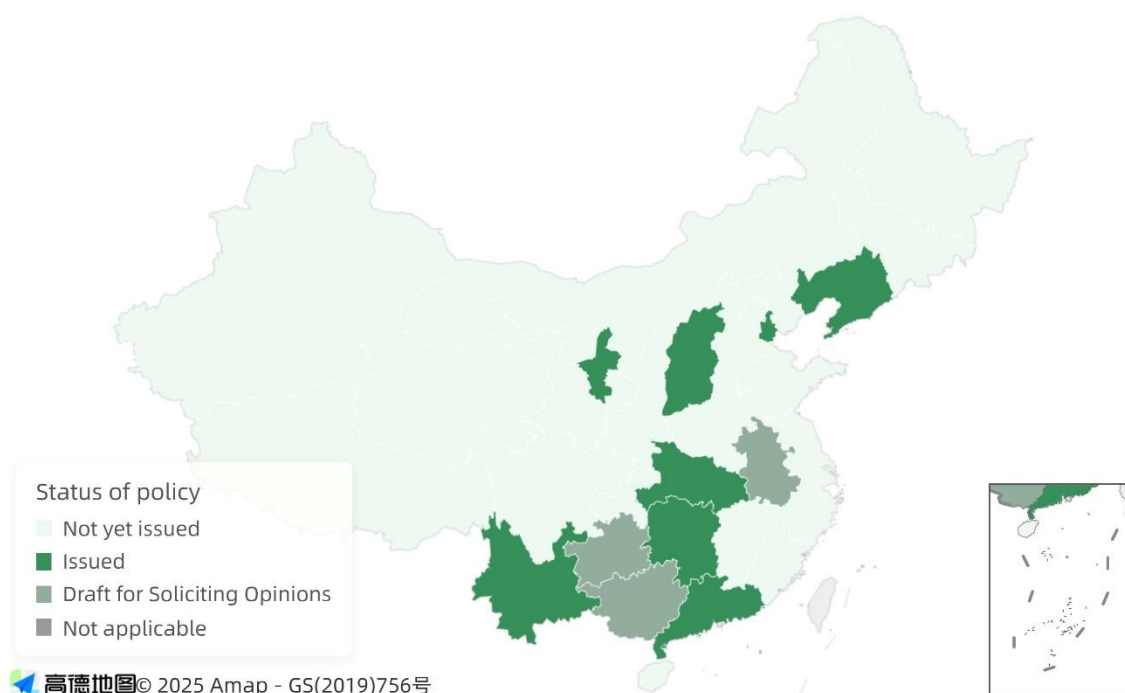
# Subnational Updates

## Decoding Policy – Expert Views on New Policies

### China's subnational methane emission reduction efforts show progress.

Following the national [Action Plan for the Control of Methane Emissions](#) published at the end of 2023, [Hunan Province](#) issued its provincial Action Plan, with a focus on improving coal mine gas utilization and curbing emissions from the agricultural and waste disposal sectors.

At the subnational level, apart from Hunan, seven other administrative regions, including [Ningxia](#), [Tianjin](#), [Shanxi](#), [Hubei](#), [Guangdong](#), [Liaoning](#), and [Yunnan](#), have also announced action plans for methane emission control.



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Figure 1. Status of Provincial Methane Emission Control Action Plans in China (as of April 2025)

The [CCNT team](#) compared provincial policies with national objectives and found that local governments have adopted distinct approaches to policy formulation, tailored to their resource endowments, geographical advantages, and other local conditions.

As one of China's carbon market pilots, **Hubei** is leveraging market mechanisms to develop methane reduction projects. It also supports eligible projects in participating in voluntary emissions trading.

**Shanxi**, one of China's major coal regions, has set quantitative targets for coal mine methane control and utilization, and plans to launch pilot projects for abandoned coal mines.

**Guangdong** emphasizes methane mitigation through technological innovation, supporting city-level initiatives to convert landfill gas into green hydrogen and methanol.

**Yunnan, Hubei, and Guangdong** all mention strengthening methane cooperation under South-South climate collaboration frameworks in their action plans.

Many of these *Plans* have set quantitative targets for the comprehensive utilization rate of livestock and poultry waste, resource utilization rate of urban household waste, and safe treatment rate of urban sludge that exceed the national baseline objectives.

## ***Policy Snapshot – Policy Highlights at a Glance***

**Several provinces and cities launch policies to advance “Dual Carbon” goals at the subnational level.**

[Zhejiang Province](#) and [Shanghai Municipality](#) both highlight their 2025 priorities for carbon peaking and carbon neutrality, emphasizing the goals to accomplish during the 14<sup>th</sup> Five-Year Plan period to **reduce dual energy consumption** and **carbon intensity**. Shanghai also underlines task forces for energy saving and emission reduction.

[Inner Mongolia](#) announced a list of **10 carbon peak pilot counties (districts)** and **20 industrial parks**.

Two cities in Shanxi Province, [Yangquan](#) and [Xinzhou](#), issued their implementation plan for carbon peaking.

**Local industrial strategies prioritize clean energy.**

[Sichuan Province](#) is working to strengthen the **new energy industrial chain**. By 2027, Sichuan will have established a development model integrating its major industrial hubs and collaborative regions. Progress will be made in achieving self-reliance in key materials, core technologies, and equipment for the new energy industry chain. The installed capacity of photovoltaic and wind power is projected to reach 45 GW.

[Shanxi Province](#) focuses on improving the **hydrogen energy industry chain**. It emphasizes the need to promote the development of the entire hydrogen energy industry chain, boost technological innovation, strengthen infrastructure, and carry out demonstration applications of hydrogen energy in transportation, industry, and other fields, thereby accelerating the formation of new quality productive forces.

[Xilingol League](#) (Inner Mongolia) aims to develop “seven competitive and characteristic industrial clusters”, encompassing green agricultural and livestock products, modern energy, advanced equipment manufacturing, green power plus advanced load-bearing industries, new chemical engineering, new materials, as well as cultural and tourism sectors. The document sets specific targets for **renewable energy installed capacity** and **energy storage capacity** targets for 2025, 2027, and 2030.

## Two provinces issued policies to promote green development in the manufacturing industry.

[Fujian Province](#) encourages energy-saving upgrades, equipment renewal, and transformation applications, aiming to enhance energy efficiency and comprehensive resource utilization of the manufacturing sector.

[Gansu Province](#) aims to become a significant regional modern manufacturing base, setting goals to reduce energy consumption per unit of added value in above-scale industries by **13.5% compared to 2020**. By the end of 2030, significant progress will be made in the **transformation and upgrading of traditional industries**, and the development of strategic emerging industries will be comprehensively elevated. **Energy consumption, material consumption, and pollutant emissions per unit of industrial added value** in key industries will reach advanced domestic standards.

## Qinghai Province issued China's first provincial-level regulation for clean energy industry development.

Qinghai Province issued the [Regulations for Promoting the Development of the Clean Energy Industry in Qinghai Province](#). The Regulations, which came into practice on 1<sup>st</sup> May, are China's first provincial-level regulation dedicated to the development of the clean energy industry. It outlines the pathways and priorities for promoting the high-quality development of the clean energy industry, with a focus on establishing and improving the working mechanisms, strengthening innovation support, and promoting integrated development.

## About the Institute for Global Decarbonization Progress (iGDP)

The Institute for Global Decarbonization Progress (iGDP) is a non-profit think tank focusing on green and low-carbon development with offices in China and Europe. Established in Beijing in 2014, iGDP is dedicated to supporting China's green and low-carbon practices, contributing to the global effort to address climate change, and providing decision-makers, investors and local communities with forward-thinking solutions. Through interdisciplinary, systematic, and empirical policy research, iGDP promotes robust energy and climate solutions with high implementation and investment feasibility. iGDP works with its partners to promote a zero emissions future and tell the story of China's green and low-carbon development.

## About China Carbon Neutrality Tracker (CCNT)

China Carbon Neutrality Tracker (CCNT) is an online database and interactive platform that tracks China's national and sub-national carbon neutrality actions by collecting and sorting publicly available policy documents with an impact on GHG emissions. It offers an overview and structural classification of China's climate actions and serves as a comprehensive compendium of the specific policies and actions of various government departments and key non-state entities. CCNT includes all policies and actions with a climate impact and classifies them by region and sector. It gathers policy information primarily from authoritative government sources at national, regional, provincial and municipal levels. CCNT currently has national and provincial webpages. The database is continuously updated to include new provincial and city-level actions, and CCNT regularly issues short policy briefings.

For the latest national and subnational carbon neutrality actions, please visit the CCNT database at <https://ccnt.igdp.cn>.

If you have any suggestions or feedback, please email us at [ccnt@igdp.cn](mailto:ccnt@igdp.cn).

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